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EXTENSION WILDLIFE DAMAGE MANAGEMENT IN ALABAMA

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Abstract. I present a compilation of wildlife damage data collected via a mail survey distributed to 146 county agents Alabama Cooperative Extension Service. A 55% response rate was obtained with 2 mailings. Snakes and rodents were the of most wildlife damage complaints. Regional differences in the number of complaints were observed for white-tailed (Odocoileus virginianus), coyotes (Cams latrans), and nine-banded armadillos (Dasypus novemcinctus). Information collection was used to: (1) determine the status of wildlife damage in Alabama from theperspective of the county extension agents; (2) educational programs; and (3) justify the production of wildlife damage management publications.

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INTRODUCTION

The Alabama Cooperative Extension Service (ACES) provides information to citizens on a variety of topics related to natural resources management. Therefore, a knowledge of the needs of ACES clientele can help make educational materials timely and relevant. One method for gathering information of client needs involves the use of surveys.

Several books have been written that assist researchers in developing valid and reliable surveys (Dillman 1978, Fowler 1984, Converse and Presser 1986). Crabb et al. (1987) provide an overview of survey techniques useful for collecting information about wildlife damage management (WDM). Extension wildlife specialists have used surveys to identify the specific WDM needs of county agents and clientele in their particular states (Jackson 1980, McComb and Bonney 1983, Curtis and Decker 1990). Unfortunately, while the methods used in these surveys are transferable across state lines, the information collected is not.

I present a compilation of wildlife damage data collected via a mail survey distributed to county agents in Alabama. I used the information collected to: (1) determine the status of wildlife damage from the county agent's perspective; (2) target educational programs; and (3) justify the production of WDM publications. In addition, I offer some insights into possible pitfalls associated with using survey research in WDM.

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METHODS

Questionnaires were mailed to all 146 county and district ACES agents with agriculture and natural resource responsibilities. A follow-up mailing (Dillman 1978) was made approximately 3 weeks after the initial mailing. The overall response rate was 55%. While this response rate was low, the sample provided an adequate cross-section of extension activities because 65 of Alabama's 67 counties (97%) represented.

The survey contained 5 parts, with items design collect information concerning frequency of wildlife complaints, species/species-groups involved, nature of plaints, and estimated economic impacts. To reduce the involved in completing the survey, potential wildlife species/species-groups (n = 30) and situations were Us Thus, the agent merely had to place the number of comp on the line in the appropriate space. Open-ended follow-u closed questions (Converse and Presser 1986) were inclu provide detail as to the nature and economic impacts of dam Liken-style questions with anchors of"seldom" and "frequently were used for items related to use and effectiveness of extension materials.
SPSS/PC+andSASwereusedtoanalyzequantitati~ data.
Kruskal-Wallis tests (chi-square approximation) we run to see if the number of complaints for deer, beaver *(Case canadensis),* coyote, and armadillo differed by geograph region.

RESULTS

Agents reported receiving frequent complaints about species/species-groups of wildlife (Table 1). Some agen indicated an inordinately high number of complaints for certa species/species-groups, thereby, inflating the mean. To adju for this tendency, results were calculated with and witho outlier responses. The median and mode may provide a month realistic assessmentof the total problem. Hawks (Accipitidac ducks and geese (Anatidae), herons (Ardeidae), frogs (Ranida(and alligators (Alligator mississippiensis) were also listed causing wildlife damage, but had meanslessthan 1.0. Depen ing on the species/species-group involved, callers report damage thatranged from household nuisances to major agriculture tural threats (Table 2).

Deer (Xz -14.21, $P < 0.001$, Table 3) and armadillo (X' 12.35, $P < 0.001$, Table 4) caused significantly more coy plaints in the southern region of the state. Armadillo (Xz= 3.1 $P = 0.076$) and coyote ($J12 = 3.69$, $P = 0.055$, Table 5) we

subjects of more complaints in the western portions of the state. Beaver complaints (Table 6) were consistently high throughout the state.

Table 1. Number of complaints received during 1990 by Alabama Cooperative Extension Service agents for species/ species-groups identified on a mail questionnaire.

Species	Mean	Adj. Mean'	Median	Adj. Median'
Snakes	27.6	17.5	10.0	9.0
Rats	26.9	16.5	10.0	10.0
Mice	23.5	12.8	8.5	6.0
Deer	22.1	16.0	9.0	7.0
Squirrel	19.2	11.5	7.5	6.0
Coyote	15.9	14.5	5.0	5.0
Armadillo	12.5	6.6	-	-
Beaver	12.3	10.6	8.5	8.0
Woodpecker	10.9	6.1	3.5	3.0

' Adjusted measure of central tendency with 4 outliers removed.

Table 2. Nature of wildlife damage complaints received by Alabama Cooperative Extension Service agents. 1990.

Damage to:	Number of Complaints Mean	Median
Yard	74.1	20
Orchard	72.2	15
Row Crops	21.8	5
Greenhouse	11.4	7
Garden	8.4	2
House	7.8	-
Livestock	1.5	-

Table 3. Number of deer complaints reported by Alabama Cooperative Extension Service agents by geographic region, 1990.

Region	No. Agents	• Mean	X2	Prob. > X2
East	33	41.50	0.11	0.746
West	47	39.79		
North	38	30.26	14.21	<0.001
South	42	49.76		

Economic data received from the survey yielded little useful information. In all cases, most agents failed to provide economic estimates of damage. Thirty-four agents provided estimates of economic impacts of deer damage ranging from $200-500,000. Estimates of the economic impacts of beaver were even more variable, as 29 respondents provided values ranging from $400-1,000,000. Estimates of the economic impact of coyotes ranged from $300-20,000 *(n = 25*).

Table 4. Number of armadillo complaints reported by Alabama Cooperative Extension Service agents by geographic region, 1990.

Region	No. Agents	Mean	X2	Prob. > X2
East	33	35.71	3.16	0.076
West	47	43.86		
North	38	32.15	12.35	<0.001
South	42	48.05		

Most agents (67.5%) took advantage of WDM materials provided by extension wildlife specialists. This included *Prevention and Control of wildlife Damage* (Timm 1983), which is in the library of each ACES county office, and Agriculture and Natural Resources Circulars produced through ACES.

Table 5. Number of coyote complaints reported by Alabama Cooperative Extension Service agents by geographic region, 1990.

Region	No. Agents	Mean	X2	Prob. > X2_
East	33	34.58	3.69	0.055
West	47	44.66		
North	38	38.71	0.43	0.510
South	42	42.12		

Table 6. Number of beaver complaints reported by Alabama Cooperative Extension Service agents by geographic region, 1990.

Region	No. Agents	Mean	X2	Prob. > Xz
East	33	42.34	0.36	0.549
West	47	39.20		
North	38	37.19	1.55	0.213
South	42	43.56		

DISCUSSION

The differences in adjusted and unadjusted means suggest that survey data need to be scrutinized for accuracy and consistency. By removing 4 outliers, many of the means were altered drastically.

coyote, 100 squirrel, 400 rat, 400 mice, 500 snake, and 500 armadillo complaints). This seems a little extreme for even the most zealous county agent.

The number of wildlife damage management activities reported by county agents suggest a need for extension wildlife specialists to provide information for agents to disseminate. Species/species-groups that had high measures of central tendency should be given priority in developing publications and programs. Thehighnumberofhomeownercomplaintssuggests that many of the wildlife damage calls are not related to agriculture. Thus, materials should be tailored to address the needs of homeowners. This is especially true of materials dealing with snakes, rodents, squirrels (Sciuridae), and other widely distributed species/species-groups.

becomes settings. Wildlife damage complaints related to deer involved orchards, crops, and ornamentals. Educational activities related to deer damage should address all of these areas.

A regional breakdown of selected species provides an indication of geographic trends in wildlife damage complaints. Armadillos were most often reported in the southern and western portions of the state. This is consistent with the viewpoint that armadillos are expanding their range eastward. Another possible explanation for the difference in armadillo complaints is habitat-related. The southern and western portions of the state are dominated by the sandier soils of the coastal plain. These areas are more suited to armadillo feeding and burrowing activities.

Although coyote reports did not differ on a north-south gradient, there were more complaints in the western portion of the state. This seems consistent with the eastward range expansion of this species.

Deer were more of a problem in the southern portion of the state. Although deerpopulations are high throughout Alabama, they are highest in the southern region. The agricultural activities in southern Alabama bring deer and man into conflict more frequently.

Estimates of economic impacts of wildlife damage were of little value. However, this emphasizes the need for research into this component of wildlife damage.

I have initiated formal educational activities for 6 of the top 8 species/species-groups as identified by this survey. Publications have been produced to assist clientele in control of damage caused by snakes, rodents, coyotes, and beaver. A demonstration plot/research area on fencing techniques for controlling deer damage to crops has been established at the Piedmont Substation of the Alabama Agricultural Experiment

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Station. A demonstration plot is being developed
mingham Botanical Gardens to show techniques f
chipmunk (Tamias striatus) control in gardens.

The number of times a client calls back for additional ' on the same problem may assist in evaluating materials or information. Callbacks from clientele reduced if useful information is being provided. A f study of callbacks received by agents using the new compared to agents not using the materials would measure of their effectiveness. Such a study is in the stages. Many county agents suggested that clients more favorably to information produced within, rather outside, the state. Supplemental information (i.e., that come in Timm 1983), may be used when additional detail is

MANAGEMENT IMPLICATIONS

As a result of information collected through this s educational packages have been prepared on a variety of issues. The next step is to evaluate the usefulness of educational materials to extension audiences. A serendip finding of the study was the lack of accurate information the economic impact of animal damage in Alabama. provided on the economics portion of the survey *w* variable as to be useless for trend analysis. An economic assessment of particular animal damage problems in Alabama is a major need.

LITERATURE CITED

Converse, J. M., and S. Presser. 1986. Survey questions: crafting the standardized questionaire SagePubl., Bev Hills. 80pp.

Crabb, A. C., T. P. Salmon, and R. E. Marsh. 1987. Survey as an approach to gathering animal damage information pages 12-24 *in* S. A. Shumake and R. W. Bullard, ed Vertebrate pest control and management materials. Vc 5. Amer. Soc. Testing and Materials, Philadelphia.

Curtis, P. D., and D. J. Decker. 1990. Wildlife damage manage ment needs in New York State: perceptions of Cornet Cooperative Extension agents. Cornell Coop. Extensio Ithaca, N.Y. 29pp.

Dillman, D. A. 1978. Mail and telephone surveys: the tot design method. John Wiley & Sons, N. Y. 325pp.

Fowler, F. J. J. 1984. Survey research methods. Sage Pub Beverly Hills. 159pp.

Jackson, J. J. 1980. Needs of county agents for vertebrate PC control information in Georgia. Vertebr. Pest Conf. 9:6 62.

McComb, W. C., and S. A. Bonney. 1983. Wildlife inform tion needs of Kentucky county extension agents. Tran Ky. Acad. Sci. 44:106-110.

Timm, R. M. (ed.) 1983. Prevention and control of wildli damage. Nebr. Coop. Extension Serv., and Great Plai Agric. Counc., Lincoln. 659pp.